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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/866,035	05/25/2001	Akira Yamaguchi	09792909-5037	4263

7590

11/07/2003

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EXAMINER

CHANEY, CAROL DIANE

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 11/07/2003

10

Please find below and/or attached an Office communication concerning this application or proceeding.

CLO 18

Office Action Summary

Application No.

09/866,035

Applicant(s)

YAMAGUCHI ET AL.

Examiner

Carol Chaney

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 7,13 and 23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6,8-12,14-22 and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6,8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

Art Unit: 1745

Election/Restrictions

Applicant's election of Species 2, a non-aqueous battery including methoxybenzene compounds in Paper No. 9, filed 30 June 2003 is acknowledged. It is noted that claims 7, 13 and 23 do not encompass applicants' elected species, and have been withdrawn from consideration. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Komaru et al., JP 10-308236 A.

Komaru et al. disclose lithium secondary batteries which include a LiCoO_2 cathode active material and a carbon anode active material. the active materials are coated on both sides of the current collectors. (Paragraphs 177-184) The electrolyte includes a non-aqueous solvent, which in a specific embodiment is ethylene carbonate and dimethyl carbonate and a methoxybenzene compound. (Paragraph 188) The concentration of the methoxybenzene compound concentration is preferably 0.005–0.8 M, which is in the claimed range of 0.01 to 10 wt%. (Paragraph 98.) Formulas 12-14

Art Unit: 1745

illustrate fluoro-anisoles as the methoxybenzene compounds. (Paragraphs 51-53).

Vinylene carbonate is disclosed as an additional solvent, in an amount less than 20 wt%. (Paragraph 105)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 9-12, 14, 15-22 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mayer, US Patent 5,783,333 in view of Komaru et al., JP 10-308236

A.

Mayer discloses lithium secondary batteries comprising composite positive electrodes. The composite cathodes contain lithium nickel cobalt metal oxides together with a lithium manganese metal oxide of the formula $\text{Li}_x\text{Mn}_{2-r}\text{M1}_r\text{O}_4$, where r is a value between 0 and 1 and M1 is chromium, titanium, tungsten, nickel, cobalt, iron, tin, zinc, zirconium, silicon, or a combination thereof. (Note abstract.) The cell will include (1) a cell container, (2) a composite positive electrode 3) an intercalation negative electrode capable of reversibly taking up lithium on charge and releasing lithium on discharge, (4) an electrolyte conductive to lithium ions, and (5) a separator between the negative electrode and positive electrode. (Column 13, lines 24-31.) The electrolyte preferably include a mixture of ethylene carbonate, diethyl

Art Unit: 1745

carbonate and dimethyl carbonate with a dissolved lithium containing salt, and may also include of polymer or gelling agent. (Column 4, lines 52-64.) Mayer thus discloses gelled electrolytes. A battery may be constructed by winding a thin negative electrode sheet and a thin positive electrode sheet separated by a separator sheet together into a spiral roll and placing the roll in the battery can. (Column 13, lines 35-40.)

The disclosure of Mayer differs from applicants' invention in that Mayer does not specifically disclose the addition of methoxybenzene in the battery electrolyte. Komaru et al. disclose adding methoxybenzene compounds to lithium secondary battery electrolytes. The addition of a methoxybenzene compound is taught as decreasing irreversible reactions at the lithium battery electrodes and thus improving cycle life (capacity retention) of the battery. (See Komaru, paragraph 13.) Therefore, it would have been obvious to one of ordinary skill in the art to add the methoxybenzene additives to the batteries disclosed by Mayer because Komaru teaches this will improve the cycle life of the batteries.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.


Shimizu, US Patent 5,709,968 discloses methoxybenzene compounds as additives to lithium battery electrolytes.

Art Unit: 1745

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (703) 305-3777. The examiner can normally be reached on Mon -Fri 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 703-308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.


Carol Chaney
Primary Examiner
Art Unit 1745

cc